REMARKS/ARGUMENTS

Claims 72 through 154 are in this application.

Claims 1-60, 62, and 64-71 have been cancelled without prejudice or disclaimer of the subject matter contained therein.

The examiner rejected claims 1-60, 62, 64-67 under 35 USC 102(e) as being anticipated by Wylie et al.

The examiner rejected claims 68-71 under 35 USC 102(b) as being anticipated by Goldman et al.

These rejections are respectfully traversed.

The specification of this application discloses a 'method for automatic drillstring design'. In this description, a wellbore includes a plurality of hole sections. This 'method for automatic drillstring design' is practiced by a computer system, which includes a processor, a recorder or display device which is adapted for generating an 'output display', and a memory which stores a software. The processor of the computer system will execute the software stored in the memory, and, responsive thereto, the processor will generate a 'summary of a drillstring in each hole section' of the wellbore, where the 'summary of the drillstring in each hole section' provides a drillstring design for the wellbore geometry in each hole section of the wellbore. Then, when the processor generates the 'summary of the drillstring in each hole section' of the wellbore, the recorder or display device will record or display 'at least a portion of the summary of the drillstring in each hole section of the wellbore' on the 'output display', where the 'output display' will include the following: (1) the plurality of hole sections of the wellbore, and, for each hole section being displayed on the output display, (2) the 'at least a portion of

the summary of the drillstring in each hole section of the wellbore'.

The previously described 'method for automatic drillstring design' is set forth, for example, in new claim 138 which is duplicated below for the examiner's convenience:

138. (new) A program storage device readable by a machine tangibly embodying a set of instructions executable by the machine to perform method steps, which are practiced by a computer system, of well planning in a well planning system in response to input data including wellbore geometry and wellbore trajectory requirements, the computer system including a processor that is responsive to the input data, a recorder or display device, and a memory, the memory storing a software, the wellbore including a plurality of hole sections, the method steps comprising:

executing, by the processor, the software stored in the memory of the computer system in response to said input data and, in response to the executing step, generating, by the processor, a summary of a drillstring in each hole section of the wellbore, the summary of said drillstring providing a drillstring design for the wellbore geometry in each hole section of the wellbore; and

recording or displaying, by the recorder or display device, at least a portion of said summary of said drillstring in said each hole section of said wellbore on an output display of said recorder or display device,

wherein said output display of said recorder or display device includes,

said plurality of hole sections, and

for each hole section on said output display, said at least a portion of said summary of said drillstring associated with said each hole section on said output display.

In claim 138 set forth above, note the following language: *"the computer system including a processor that is responsive to the input data, a recorder or display device, and a memory, the memory storing a software"* and *"executing, by the processor, ... "* and *"recording or displaying, by the recorder or display device,..."* and *"wherein said output display of said recorder or display device includes, ... "*. Claim 138 clearly recites a program storage device that, when read by a machine, performs method steps that are practiced by a computer system, where the method steps include the *"executing, by the processor, ... "* step and the *"recording or displaying, by the recorder or display device,..."* step and the *"wherein said output display of said recorder or display device includes, ... "* step.

In new method claim 72, for example, similar language can also be found, as follows:

72. (new) A method, practiced by a computer system, of well planning in a well planning system in response to input data including wellbore geometry and wellbore trajectory requirements, the computer system including a processor that is responsive to the input data, a recorder or display device, and a memory, the memory storing a software, the wellbore including a plurality of hole sections, comprising:

executing, by the processor, the software stored in the memory of the computer system in response to said input data and, in response to the executing step, generating, by the processor, a summary of a drillstring in each hole section of the wellbore, the summary of said drillstring providing a drillstring design for the wellbore geometry in each hole section of the wellbore; and

recording or displaying, by the recorder or display device, at least a portion of said summary of said drillstring in said each hole section of said wellbore on an output display of said recorder or display device,

wherein said output display of said recorder or display device includes,

said plurality of hole sections arranged along a corresponding plurality of rows of said output display, and

for each hole section in each row of said output display, said at least a portion of said summary of said drillstring arranged along a plurality of columns associated with said each hole section in said each row of said output display.

In new method claim 141, similar language can also be found, although more narrowly drawn, as follows:

141. (new) A method, practiced by a computer system, of well planning in a well planning system including automatically generating a required number of drillstrings to support a set of weight requirements of each drill bit, a set of directional requirements of a wellbore trajectory, and a set of mechanical requirements of a rig and drill pipe in response to input data including wellbore geometry and wellbore trajectory requirements, the computer system including a processor, a recorder or display device, and a memory that stores a software, the wellbore including one or more hole sections, comprising:

executing, by the processor, the software stored in the memory in response to said input data, and, responsive thereto, generating, by the processor, a summary of a drillstring for each hole section of a wellbore, the summary providing a drillstring design of the wellbore geometry for each hole section of the wellbore,

wherein the step of generating, by the processor, a summary of the drillstring for each hole section of the wellbore includes,

generating an outer diameter of one or more drill collars (DC), an outer diameter of a heavy weight (HW), and an outer diameter of a drill pipe (DP),

generating a weight of the drill collars (DC) and a weight of the heavy weight (HW), and

generating a length of the drill collars (DC), a length of the heavy weight (HW), and a length of the drill pipe (DP); and

recording or displaying, by the recorder or display device, at least a portion of said summary of said drillstring for said each hole section of said wellbore on an output display of said recorder or display device,

wherein said output display includes,

a plurality of hole sections, and

for each hole section of said plurality of hole sections, a summary of the drillstring for said each hole section, the summary of the drillstring for said each hole section including an outer diameter of one or more drill collars (DC), an outer diameter of a heavy weight (HW), and an outer diameter of a drill pipe (DP), a weight of the drill collars (DC), a weight of the heavy weight (HW), a length of the drill collars (DC), a length of the heavy weight (HW), and a length of the drill pipe (DP).

In all of the claims in the above identified application, the 'output display', which is recorded or displayed on the recorder or display device, is recited as including, at least, the following characteristics: "*said plurality of hole sections, and, for each hole section on said output display, said at least a portion of said summary of said drillstring associated with said each hole section on said output display.*"

Recall that all of the claims recite: "*generating, by the processor, a summary of a drillstring in each hole section of the wellbore*". In some of the dependent claims, the *'summary of a drillstring in each hole section'* is recited to include 'certain specific

concepts which include algorithmic characteristics'.

For example, note the following claims 76, 77, and 78 (and also note claims 143-147 and 150-154) which recite the *'summary of a drillstring in each hole section'* as including the 'certain specific concepts which include algorithmic characteristics', as follows:

76. (new) The method of claim 75, wherein the step of determining an outer diameter of said DC1, said DC2, said HW, and said DP of said drillstring comprises:

determining an outer diameter of said DC1 ($DC1_{OD}$) from a table using a hole size;

determining an outer diameter of said DC2 ($DC2_{OD}$) by using a stiffness ratio (SR), where:

$SR = Z_{BIG}/Z_{SMALL,}$ *and where*
$Z = (\theta/32)\ ((OD^4 - ID^4) / OD)$,
$SR < 3.5$, *and*
$DC2_{OD} <= DC1_{OD}$ & $DC2_{OD} >= DP_{OD,}$ *and*

where 'θ' is used for the wellbore inclination and OD is an outer diameter and ID is an inner diameter;

determining an outer diameter of said HW (HW_{OD}) by using said stiffness ratio (SR), where

$SR = Z_{BIG}/Z_{SMALL,}$
$Z = (\theta/32)\ ((OD^4 - ID^4) / OD)$,
$SR < 3.5$, *and*
$HW_{OD} <= DC2_{OD}$ & $HW_{OD} >= DP_{OD,}$ *and where*
$DP_{OD} <= HW_{OD}$; *and*

determining an outer diameter of said DP (DP_{OD}) by using a stiffness ratio (SR), where an outer diameter of said DP (DP_{OD}) is obtained from a table using the hole size and $DP_{OD} <= DC1_{OD}$.

77. (new) The method of claim 75 wherein the step of determining a weight of said DC1, said DC2, and said HW of said drillstring comprises:

determining a maximum weight-on-bit (WOB) used in the hole section; and

determining a weight of said DC1, said DC2, and said HW, where 'θ' is used for a wellbore inclination and 'DF' is a design factor, and where,

$$HW_w = \frac{WOB(DF)}{K_b * COS(\theta)}\left(\frac{5+\theta}{100}\right),$$

$$DC1_w + DC2_w = \frac{WOB(DF)}{K_b * COS(\theta)}\left(\frac{95-\theta}{100}\right), \text{ or}$$

$$DC1_w + DC2_w = \frac{WOB(DF)}{K_b * COS(\theta)} - HW_w,$$

$DC1_W = DC1_L * DC1_{WFT}$, and

$DC2_W = (DC1 + DC2) - DC1$.

78. (new) The method of claim 75, wherein the step of determining a length of said DC1, said DC2, said HW, and said DP of said drillstring comprises:

determining a length of said DC1, said DC2, said HW, and said DP, where,

$DC1 - DC1_L = 90$ Feet $= 1$ Stand $= 3$ Joint,

$DC2 - DC2_L = DC2_W / DC2_{WFT}$,

$HW - HW_L = HW_W / HW_{WFT}$, and

$DP - DP_L = (\text{Bit Section Length}) - (DC1_L - DC2_L - HW_L)$.

The examiner rejected the claims over the Wylie reference and the Goldman reference.

The Wylie reference discloses an assembly and method for constructing a monowell. For example, in paragraph [0110] of the Wylie reference, the real invention in the Wylie reference is set forth as follows: *"The present invention relates to methods and apparatus for drilling a monodiameter wellbore for receiving a monodiameter casing which in turn may receive a monobore production delivery system in constructing a Monowell."*

All of the figures of drawing in Wylie disclose 'downhole wellbore apparatus'. In addition, the Wylie reference fails to illustrate any 'output displays'. Wylie makes a vague reference to 'visualization' in paragraph [0146], but there are no actual 'output displays' discussed or illustrated in Wylie.

Wylie does not disclose the 'computer system', as claimed in this application, including the 'processor' and the 'memory' and the 'recorder or display device' which generates the 'output display', where the 'output display' further includes "*said plurality of hole sections, and, for each hole section on said output display, said at least a portion of said summary of said drillstring associated with said each hole section on said output display.*" In fact, the Wylie reference fails to disclose or illustrate any 'output displays' which include: "*said plurality of hole sections, and, for each hole section on said output display, said at least a portion of said summary of said drillstring associated with said each hole section on said output display.*" In any event, Wylie fails to disclose the 'certain specific concepts which include algorithmic characteristics' that are set forth in claims 76, 77, and 78 (duplicated above for the examiner's convenience) and are also set forth in claims 143-147 and 150-154.

The Goldman reference also fails to disclose an 'output display' as including "*said plurality of hole sections, and, for each hole section on said output display, said at least a portion of said summary of said drillstring associated with said each hole section on said output display.*" In any event, Goldman also fails to disclose the 'certain specific concepts which include algorithmic characteristics' that are set forth in claims 76, 77, and 78 (duplicated above for the examiner's convenience) and are also set forth in claims 143-147 and 150-154.

Consequently, all of the claims in the above identified application recite the following 'concept', which is set forth below in method form, as follows:

A method, practiced by a computer system, of well planning in a well planning system in response to input data including wellbore geometry and wellbore trajectory requirements, the computer system including a processor that is responsive to the input data, a recorder or display device, and a memory, the memory storing a software, the wellbore including a plurality of hole sections, comprising:

executing, by the processor, the software stored in the memory of the computer system in response to said input data and, in response to the executing step, generating, by the processor, a summary of a drillstring in each hole section of the wellbore, the summary of said drillstring providing a drillstring design for the wellbore geometry in each hole section of the wellbore; and

recording or displaying, by the recorder or display device, at least a portion of said summary of said drillstring in said each hole section of said wellbore on an output display of said recorder or display device,

wherein said output display of said recorder or display device includes,

said plurality of hole sections, and,

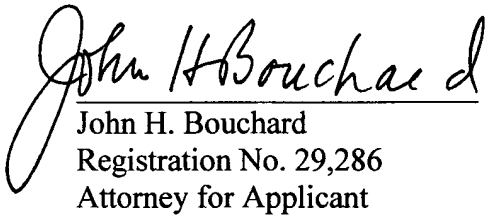
for each hole section on said output display, said at least a portion of said summary of said drillstring associated with said each hole section on said output display.

Since the above referenced 'concept' is not disclosed, taught, or suggested in either the Wylie reference or the Goldman reference, it is respectfully submitted that the new claims 72-154 are allowable over the prior art cited by the examiner, and an early notice of allowance is earnestly solicited.

Accordingly, in view of the foregoing amendments and remarks, consideration and allowance of claims 72 through 154 is respectfully requested.

Please charge any additional fee and credit any overpayment to deposit account 07-1078.

Respectfully Submitted,



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